Notes on *Zygaena* Species from South-west France and Spain with Descriptions of three new Subspecies (Lepidoptera: *Zygaenidae*)

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In the summer of 1962, Col. and Mrs. W. B. L. Manley revisited Spain to collect further *Zygaena* species. The following notes are based on the results of their collecting and are, in part, supplementary to my earlier paper (Tremewan, 1961).

Z. sarpedon kampfi Marten
Z. sarpedon kampfi Marten, 1957, *Ent. Z.*, **67**: 273

Two worn females were taken on 10 and 11.vi.1962 at Villajoyosa, Alicante, 100 ft. I place these specimens under ssp. *kampfi* Marten as they agree very well with the original description which was based on specimens from Hügel, near Altea, Alicante.

Z. sarpedon bethunei Romei
Z. sarpedon bethunei Romei, 1927, *Ent. Rec.*, **39**: 107.

This subspecies was rather common at Diezma, Granada, 4,000 ft. where a large series of thirty-seven males and ten females was taken 19-24.vi.1962. A further three males and one female were captured at Puerto de la Ragua, Granada, 4,500 ft., 16-19.vi.1962. The series shows considerable variation, as eight specimens, six males and two females, are ab. *quinquepuncta* Reiss and have spot 3 present on the forewings. A worn female from Diezma has suffused forewing spots and is ab. *rubrior* Reiss. The ssp. *bethunei* was described from Guadix, Sierra Nevada, 3,500 ft., which is situated approximately twelve miles east of Diezma.

Z. sarpedon escorialica Reiss
Z. sarpedon escorialica Reiss, 1936, *Ent. Rdsch.*, **54**: 30, pl. 2, figs.

A single worn male of this subspecies was captured 26.vi.1962 at La Granja, Segovia, 3,900 ft., and does not differ from specimens from Escorial, Madrid, which is the type locality.

Z. sarpedon rianoica Tremewan
Z. sarpedon rianoica Tremewan, 1961, *Ent. Rec.*, **73**: 1.
(Pl. I, figs. 1, 2)

A large series of forty-nine males and eighteen females was taken at the type locality, Riano, Leon, 3,500 ft., 27.vi-10.vii.1962. This subspecies shows slight variation, as in many specimens, spot 3 is absent on the forewings. A further two females have rather enlarged forewing spots.

I should like to take this opportunity of correcting a typographical error in my original description, which reads ". . . spot 4 large, and joined to spot 5 by a scarlet bar". This should read: "spot 4 large, and joined to spot 2 by a scarlet bar".

Z. contaminei penalabrica Fernández
Z. penalabrica Fernández, 1929, *Mem. Soc. esp. Hist. nat.*, **15**: 599, figs. 8, 9.

Two specimens, a male and a female, were taken 1-3.vii.1962, at Riano,

Leon, 3,500 ft. Both specimens are ab. *cingulata* Fernández and have traces of a red abdominal belt.

Z. fausta fortunata Rambur

Z. fausta fortunata Rambur, 1866, Catalogue Systématique des Lépidoptères de l'Andalousie, p. 172.

A series of twenty-three males and five females was taken at Vieux Mareuil, Dordogne, 350 ft., 1.vi.1962. These specimens are referable to ssp. *fortunata* Rambur, described from Angoulème, Charente.

Z. hilaris aphrodisia Burgeff

Z. hilaris aphrodisia Burgeff, 1926, *Mitt. münch. ent. Ges.*, **16**: 43.

Five males of this subspecies were taken at Diezma, Granada, 4000 ft., 19-23.vi.1962. Burgeff described the ssp. *aphrodisia* from Alg. de la Lluvia, Granada.

Z. hilaris leonica Tremewan

Z. hilaris leonica Tremewan, 1961, *Ent. Rec.*, **73**: 3.
(Pl. I, figs. 5, 6)

A large series of sixty-four males and twenty females was taken at Riano, Leon, 3500 ft., 28.vi.-10.vii.1962. This series enables me to supplement my original description which was based on the female sex only. The wing expanse of the males is 21-27 mm., of the females, 24-28 mm. The colour of the forewing spots and the hindwings varies from dull vermilion through vermilion to orange-vermilion. The light yellow which edges the black areas of the forewings is sometimes absent. In the original description I compared ssp. *leonica* with ssp. *escorialensis* Oberthür but I now consider it to be more closely related to ssp. *lucifera* Reiss from Albarracin, Teruel, 1500-1750 m. It differs, however, in the longer and narrower forewings and the vermilion coloration which is replaced by scarlet in ssp. *lucifera*.

In the female type the spots are confluent and are similar to those in ssp. *escorialensis* but the confluence is more extreme. The pattern of the forewings is somewhat variable. In the majority of the specimens, especially the males, the central black "spot" is not separated from the black costal area. The confluence in the type specimen is therefore rather more extreme than in normal specimens.

Z. occitanica vandalitia Burgeff

Z. occitanica vandalitia Burgeff, 1926, *Mitt. münch. ent. Ges.*, **16**: 62.

A male ab. *albicans* Staudinger was bred 9.vii.1962 from a cocoon found at Puerto de la Ragua, Granada, 4500 ft.

Z. occitanica eulalia Burgeff

Z. occitanica eulalia Burgeff, 1926, *Mitt. münch. ent. Ges.*, **16**: 63.

Four males of this subspecies were taken on the Sierra de Espuna, Murcia, 2000 ft., 13.vi.1962. One specimen has a bright, completely vermilion abdominal belt compared with the normal form which has the vermilion of the abdominal belt interspersed with black scales. A further and more extreme aberration has the cream rings of the forewing spots strongly reduced, while spot 6 is also reduced to a few cream scales.

Z. freudei Daniel

Z. freudei Daniel, 1960, *Opusc. Zool.*, **46**: 1, figs. 1a-1d, 2a, 2b.

A series of twenty males and fifteen females was collected or bred 10-23.vi.1962 from the neighbourhood of Villajoyosa, Alicante. This series shows that the species varies considerably in spot formation. In many specimens the cream rings around the forewing spots are absent while one male and four females have the forewing spots confluent. The coloration of the forewing spots and the hindwings varies from vermilion to scarlet.

For the following field notes I am indebted to Col. and Mrs. W. B. L. Manley who devoted four days, 9th-12th June, to searching for this species between Villajoyosa and Alicante. The moth, which was by no means common, was flying in equal numbers with *Z. occitanica eulalia* Burgeff over rough, scrub-covered ground. A few cocoons containing pupae were collected and, although no difference between them could be detected, they produced approximately equal numbers of the two species. No larvae could be found and the foodplant could not be determined. The few cocoons that were found were usually partly hidden in the various shrubs growing in the area. None of these was the foodplant of *occitanica vandalitia* Burgeff in the Sierra de Alfacar near Granada. Only one pair of moths, a male *occitanica eulalia* and a female *freudei*, was found *in copula*.

Ova were obtained from one of the captured female *freudei* and these were sent to the writer by air-mail. The eggs, which were bright yellow in colour and of the usual somewhat flattened, ovoid shape, were laid on 10th June. The female was placed in a pill-box where it readily laid the eggs in batches of a dozen or so during the night. A piece of *Anthyllis genistae* Duf., which was growing abundantly in the area, was placed in the box and a few eggs were also laid singly along the stem of this plant. It could not be ascertained whether this plant is the foodplant of the larvae. The eggs hatched on the 19th June, their colour having changed to a dull, leaden grey on the previous day.

The newly hatched larvae were given *Anthyllis vulneraria* L. and *Hippocrepis comosa* L. but accepted neither. Eventually, on 21st June, the larvae began to feed rather hesitatingly on *Lotus corniculatus* L. By the 30th June I had lost over a dozen larvae but the remainder continued to feed on *L. corniculatus*. As a result of their feeding, the leaves were blotched and the larvae were inclined to mine the leaves to a certain extent and eat the parenchyma close to the upper epidermis. On 5th July the larvae cast their skins and entered the second instar. The larvae were then of a rather uniform brown colour which gradually became green after their second moult, i.e., when the larvae were in their third instar. The second moult took place on 12th-14th July. After this date, the larvae began to die until, by the 26th August, I was left with one larva which was then in the fourth instar, when the following description was made. The ground colour of the larva is pale green with a black, broken subdorsal line, immediately beneath which, on the posterior part of each segment, is a yellow spot. Anterior to the yellow spot the colour is lighter and is greenish white. The head, legs and spiracles are black. The larva is thinly covered with a mixture of black and of white setae.

Shortly after this description was made the larva died. My lack of success was probably due to an unsuitable foodplant and the rather humid climate of Cornwall where I was staying for most of the time that I had the larvae.

The correct status of *freudei* cannot be satisfactorily determined. It was originally described by Daniel as a species and was compared with *Z. carniolica* Scopoli from which it is undoubtedly distinct. An examination of the genitalia of *freudei* has shown that these have no constant differences from the genitalia of *occitanica* de Villers. As stated above, a male *occitanica* was found *in copula* with a female *freudei*. This observation suggests, but does not prove, that the two are conspecific, as many species of *Zygaena* have often been observed *in copula*. It is interesting to note that *freudei* and *occitanica* occur in approximately equal numbers and that, if interbreeding is taking place, no intermediate forms have yet been found. In order to establish the true status of *freudei* it would be necessary to make detailed field observations. A knowledge of the life-history and genetics would also be invaluable in determining its relationship with *occitanica*.

Although the genitalia of *freudei* and *occitanica* are practically identical this does not necessarily indicate that they are conspecific. A parallel case is found in *Z. trifolii* Esper and *Z. lonicerae* Scheven which have only minute genital differences which are not always constant. It is well known that the two can interbreed quite freely and produce fertile offspring. There is no doubt, however, that *trifolii* and *lonicerae* are distinct species as the larvae have different morphological characters which remain constant.

Z. ignifera diezma ssp. nov.

(Pl. I, figs. 7, 8)

A series of eight males and three females of *ignifera* Korb was taken 19-24.vi.1962 in the neighbourhood of Diezma, Granada, 4000 ft. These specimens represent a new subspecies as they differ considerably from the nominate subspecies which was described from Huelamo, near Cuenca, Castile.

♂ 29-32 mm. Differs from *ignifera ignifera* by the reduction of the red pattern in the forewings. The black areas are therefore increased and are wider along the termen and extend around the tornus to half way along the inner margin. The black area also extends from the apex along the costa until it reaches the black costal "spot" which, in the nominate subspecies, is surrounded with red coloration. The latter differs strongly between the two subspecies. In ssp. *ignifera* it is a warm, orange-vermilion while in ssp. *diezma* the red coloration is pure vermilion.

♀ 33-35 mm. The female is similar to the male in coloration, the vermilion pattern of the forewings being reduced with the consequent extension of the black areas.

Holotype ♂ "Diezma, Granada, 4000 ft.: 19.6.1962 W. & M. Manley".

Allotype ♀ with similar data but dated "20.6.1962".

Paratypes: 3 ♂♂ and 1 ♀ with similar data but dated "21.6.1962"; 1 ♂ "22.6.1962"; 1 ♂ "24.6.1962"; 1 ♀ "23.6.1962"; 1 ♂ labelled "HISPANIA mer. Prov. Granada, Guadix, 23.VI.1960 leg. K. Sattler".

The holotype, allotype and above mentioned paratypes are in W. & M. Manley collection.

The following paratypes are in the Zoologische Sammlung des Bayerischen Staates, München:

1 ♂ "Diezma 19.vi.1962"; 1 ♀ "Diezma 26.vi.1962"; 1 ♀ "HISPANIA Prov. Granada Diezma 22.VI.1960 leg. K. Sattler Staatsslg. München".

The new subspecies can be compared with ssp. *dertosensis* de Sagarra

which also has a similar reduction of the red pattern of the forewings. However, according to the description, ssp. *dertosensis* differs from ssp. *diezma* in the red coloration which is orange-vermilion as in *ignifera ignifera*. The ssp. *dertosensis* was described from Monte Caro, Puertos de Tortosa, Catalonia.

In Granada, the species is found uncommonly in the mountains to the west of Diezma and has also been taken some ten miles to the north-east of Guadix. The species is evidently not common, as six days continuous collecting by Col. and Mrs. Manley produced only eleven specimens of which three are females. As all the specimens are not in good condition the species had apparently been on the wing for several days.

Z. achilleae pardoi Agenjo

A. achilleae pardoi Agenjo, 1953, *Graellsia*, **11**: 2.

A series of fifty-two males and fifteen females was taken at Riano, Leon, 3500 ft., 29.vi.-10.vii.1962. A further twelve males and four females were captured at Puerto de San Glorio, Leon, 5100 ft., 2.vii.1962. Two males from Riano and four males and one female from Puerto de San Glorio have the forewing spots confluent, as follows: 1+3, 2+4, 5. A female from Riano has traces of a red abdominal belt. As I have done previously (Tremewan, 1961: 3), I place the Riano and Puerto de San Glorio populations under ssp. *pardoi* Agenjo which was described from Pesués, near Torrelavega, Santandar, at a height of 14 m. It should be noted, however, that this locality is at a much lower altitude than Riano and Puerto de San Glorio.

Z. achilleae miniacea Oberthür

Z. achilleae miniacea Oberthür, 1910, Études de Lépidoptérologie comparée, **4**: 462.

Two fresh males of this subspecies were captured at Vieux Mareuil, Dordogne, 350 ft., 1.vi.1962. Oberthür described the ssp. *miniacea* from Dompierre-sur-Mer, Charente-Inférieure.

Two further *achilleae*, both fresh males, were taken at Ezy-sur-Eure, Eure, 250 ft., 31.v.1962. These two specimens agree with the populations from Seine-et-Oise and represent an undescribed subspecies. I temporarily place them under ssp. *miniacea* Oberthür.

Z. rhadamanthus alfacarensis Reiss

Z. rhadamanthus alfacarensis Reiss, 1922, *Int. ent. Z.*, **15**: 176.

A series of fifteen males and eighteen females was taken at Puerto de la Ragua, Granada, 4500 ft., 16-19.vi.1962. These specimens do not differ from ssp. *alfacarensis* Reiss which was described from the Sierra de Alfacar.

Z. rhadamanthus aragonia Tremewan

Z. rhadamanthus aragonia Tremewan, 1961, *Ent. Rec.*, **73**: 4

Five males and one female were taken at La Losilla, Teruel, 4500 ft., 6-7.vi.1962. I place them under ssp. *aragonia* Tremewan which was described from Albarracin at an altitude of 1100 m. The La Losilla specimens differ, however, in being rather larger, with a darker ground colour on the forewings.

Z. rhadamanthus manleyi Tremewan

Z. rhadamanthus manleyi Tremewan, 1961, *Ent. Rec.*, **73**: 4.
(Pl. I, figs. 9-11)

A large series of seventy-five males and twenty females was taken at La Pena, Huesca, 2400 ft., 2-4.vi.1962. My original description, which was based on the males only, can now be supplemented with that of the females which are 29-34 mm. in wing expanse. The ground colour of the forewings is bluish or greenish/black, dusted with greyish white scaling. As in the male, the spots are normally confluent in pairs and are, together with the hindwings, bright scarlet. The hindwing border is narrow or even absent. The white hairs of the thorax are thicker and more conspicuous compared with those in the male.

In the above mentioned series, thirty-four males and three females have no abdominal belt and are ab. *acingulata* Tremewan. Eight males and four females have spot 6 separate from spot 5. A beautiful male, captured 3rd June, has all the spots confluent.

Z. rhadamanthus ? ssp.

A single worn male was taken at Riano, Leon, 3500 ft., 28.vi.1962. The specimen is slightly confluent as the forewing spots are joined in pairs which are then connected by a narrow bar. The species has not previously been recorded from the Picos de Europa and the populations there may represent a new subspecies.

Z. lavandulae alfacarica Tremewan

Z. lavandulae alfacarica Tremewan, 1961, *Ent. Rec.*, **73**: 5.
(Pl. I, figs. 12-14)

A male and two females were taken at Puerto de la Ragua, Granada, 4500 ft., 16-18.vi.1962. The specimens do not differ from ssp. *alfacarica* Tremewan which was described from the Sierra de Alfacar, 3600 ft. The two females are ab. *pseudoespunnensis* Tremewan and have a suffusion of vermilion scaling on the hindwings.

Z. lavandulae espunnensis Reiss

Z. lavandulae espunnensis Reiss, 1922, *Int. ent. Z.*, **15**: 176.

A single, worn male of this subspecies was taken at the type locality, the Sierra de Espuna, Murcia, 2000 ft., 13.vi.1962.

A further male and three females of *lavandulae* Esper were captured at Villajoyosa, Alicante, 100 ft., 10-12.vi.1962. According to Mr. H. Reiss (*in litt.*) these specimens are referable to ssp. *espunnensis* Reiss.

Z. lavandulae teruelensis Reiss

Z. lavandulae teruelensis Reiss, 1936, *Ent. Rdsch.*, **54**: 72, pl. 2, figs.

This subspecies was described from the neighbourhood of Albarracin, Teruel. A series of thirteen males and two females, referable to ssp. *teruelensis* Reiss, was taken at La Losilla, Teruel, 4500 ft., 6-7.vi.1962.

Z. lavandulae huescae ssp. nov.
(Pl. I, figs. 15, 16)

A series of *lavandulae* Esper, thirty-five males and eighteen females, was taken at Puerto de Santa Barbara, Huesca, 3300 ft., 3-4.vi.1962. These specimens do not resemble any known Spanish subspecies and, being

different from *lavandulae lavandulae* Esper, represent a new subspecies. ♂ 30-35 mm. Ground colour of forewings black with blue-green gloss, spots rather small, vermilion tinged with scarlet. Hindwings blue-black, a small vermilion distal spot, a few vermilion scales at the base of the wing. Head and thorax black, collar white, abdomen thinly haired, black with a slight bluish gloss.

♀ 34-38 mm. In coloration the female is similar to the male but the ground colour of the forewings is greener while the abdomen has a brighter bluish gloss.

Holotype ♂ "P. de S. Barbara, Huesca, 3300 ft.: 4.6.1962 W. & M. Manley". Allotype ♀ with the same data.

Paratypes: 23 ♂♂ and 11 ♀♀ with the same data as the holotype; 9 ♂♂ and 5 ♀♀ with similar data but dated "3.6.1962".

Holotype, allotype and forty-one paratypes in W. & M. Manley collection; seven paratypes in collection British Museum (Natural History).

The new subspecies differs from ssp. *teruelensis* Reiss by its smaller size and smaller forewing spots. These characters also separate it from the nominate subspecies from the South of France (Languedoc). It is closely related to ssp. *barcelonica* Reiss but differs in the narrower fore- and hindwings while the gloss is not so bright and is greener in ssp. *huescae* Tremewan.

In the above mentioned series five males have spot 4 divided by a black line. The spot then represents a figure "8".

Z. hippocrepidis rupicola Rocci

Z. hippocrepidis rupicola Rocci, May, 1936, *Boll. Soc. ent. ital.*, **68**: 41.

Z. transalpina asturiensis Reiss, November, 1936, *Ent. Rdsch.*, **54**: 91, pl. 2, figs. (**syn. nov.**).

Two males and one female were captured at Riano, Leon, 3500 ft., 29.vi.-1.vii.1962.

This subspecies was first described by Rocci under the name of *rupicola* in May, 1936, the type specimens originating from "Fuente de Picos de Europa". Six months later, in November, 1936, the subspecies was described by Reiss as ssp. *asturiensis* from the neighbourhood of La Liebana and Treviso. I have been unable to examine the types but the name *asturiensis* Reiss is now considered a synonym of *rupicola* Rocci.

Z. hippocrepidis ? ssp.

Two males and one female of *hippocrepidis* Hübner were captured at La Pena, Huesca, 2400 ft., 2-3.vi.1962. Two further females were bred 17 and 20.vi.1962 from cocoons collected in the same locality.

I previously recorded a single, worn male from this locality and provisionally placed it under ssp. *asturiensis Reiss* (=ssp. *rupicola* Rocci) (Tremewan, 1961: 6). The additional material taken in 1962 shows that the La Pena population is not identical with ssp. *rupicola* Rocci from the Picos de Europa. I now consider the La Pena specimens to represent an undescribed subspecies which is more closely related to ssp. *centripyrenaea* Burgeff from the Hautes-Pyrénées. According to the available material the new subspecies differs from ssp. *centripyrenaea* by the narrower hindwing borders while the thorax and abdomen have a distinct blue gloss which is absent in *centripyrenaea*. The ssp. *rupicola* may be readily separated by the wider hindwing borders and the slight reduction of spot 6 in the forewings, while the red coloration is tinged with crimson

compared with pure scarlet in the La Pena specimens. Before describing the La Pena populations as a new subspecies I would prefer to have a longer series of specimens before me to confirm the above observations.

Z. hippocrepidis occidentalis Oberthür

Z. hippocrepidis occidentalis Oberthür, 1907, *Ann. Soc. ent. Fr.*, **76**: 41.

Seven males and one female were taken at Vieux Mareuil, Dordogne, 350 ft., 1.vi.1962. A further female was bred from a cocoon, 10.vi.1962. Six of these specimens, all males, are ab. *cingulata* Hirschke and have traces of a red abdominal belt. The population of *hippocrepidis* from Vieux Mareuil is referable to ssp. *occidentalis* Oberthür which was described from Dompierre-sur-Mer, Charente-Inférieure.

Z. nevadensis nevadensis Rambur

Z. nevadensis Rambur, 1866, *Catalogue Systématique des Lépidoptères de l'Andalousie*, p. 166, pl. 1, fig. 10.

A series of five males was taken at Diezma, Granada, 4000 ft., 22-23.vi.1962. Rambur's type specimens originated from the Sierra Nevada.

Z. nevadensis picos Agenjo

A. scabiosae picos Agenjo, 1953, *Graellsia*, **11**: 1.

A series of two males and ten females was taken at Riano, Leon, 3500 ft., 29.vi.-9.vii.1962. The original series of ssp. *picos* Agenjo was taken at Camaleño, Santandar.

Z. filipendulae kricheldorffiana Reiss

Z. filipendulae kricheldorffiana Reiss, 1936, *Ent. Rdsch.*, **54**: 75, pl. 2, figs.

A series of twelve males and six females was taken at Riano, Leon, 3500 ft., 27.vi.-10.vii.1962. A further male was bred from a cocoon, 14.vi.1962. One of the males, captured 6th July, has spot 6 present on the forewings and is ab. *sexmaculata* Tremewan. Reiss described the ssp. *kricheldorffiana* from La Liebana, Asturies.

Z. trifolii caerulescens Reiss

Z. trifolii caerulescens Reiss, 1936, *Ent. Rdsch.*, **54**: 90, pl. 2, figs.

Z. australis var. *caerulescens* Oberthür, 1910, Études de Lépidoptérologie comparée, **4**: 493 (ab. *caerulescens* Oberthür, infrasubspecific).

A series of twenty-three males and nine females was taken at Diezma, Granada, 4000 ft., 19-24.vi.1962. The ssp. *caerulescens* Reiss originates from the Sierra de Alfacar. The specimens from Diezma are rather variable, especially in the hindwing border which grades from the typical *caerulescens* to ab. *pseudoaustralis* Reiss with a comparatively narrow hindwing border. Seven males and three females are placed as ab. *pseudoaustralis* Reiss.

Z. trifolii pajini ssp. nov.

(Pl. I, figs. 18, 19)

Twelve males and two females of *trifolii* Esper were taken at Riano, Leon, 3500 ft., 29.vi.-4.vii.1962. Seven males and three females were captured at Puerto de Pandetrave, Leon, 5000 ft., 9.vii.1962 and two males and one female were taken at Puerto de San Glorio, Leon, 5100 ft., 2.vii.1962. In spite of the different altitudes the specimens do not differ greatly and, being different from the other known Spanish subspecies, they

represent a new subspecies which I describe below.

♂ 29-33 mm. Head, thorax and abdomen blue-black with a strong blue gloss. Ground colour of forewings rather glossy bluish black. Spots separate, dull crimson. Hindwings dull crimson with blue-black terminal border approximately 2 mm. wide, becoming wider at the apex.

♀ 31-34 mm. The female is similar to the male in coloration but one specimen has a greenish gloss in the ground colour of the forewings. The terminal border of the hindwings is narrower than that of the male.

Holotype ♂ "Riano, Leon, 3500 Ft: 29.6.1962 W. & M. Manley.".

Allotype ♀ with similar data but dated "4.7.1962".

Paratypes: 7 ♂♂ and 1 ♀ with the same data as the holotype; 4 ♂♂ with similar data but dated "1.7.1962"; 5 ♂♂ and 3 ♀♀ labelled "P. de Pandetrave, Leon, 5000 Ft: 9.7.1962 W. & M. Manley."; 2 ♂♂ 1 ♀ labelled "P. de San Glorio, Leon, 5100 Ft. 2.7.1962 W. & M. Manley.".

Holotype, allotype and twenty-one paratypes in W. & M. Manley collection; two paratypes in collection British Museum (Natural History).

The new subspecies differs from ssp. *hibera* Verity from Oviedo in its smaller size and the narrower forewings which have a rounded apex. The dull crimson of the forewing spots and hindwings also readily separate it from ssp. *hibera* in which the red coloration is warmer and may be described as carmine. These characters also separate it from the nominate subspecies from Frankfurt, Germany.

Z. lonicerae leonensis Tremewan

Z. lonicerae leonensis Tremewan, 1961, *Ent. Rec.*, **73**: 8.
(Pl. I, figs. 20, 21)

Four males and one female of this interesting subspecies were taken at Riano, Leon, 3500 ft., 4-9.vii.1962. A further male was captured at Puerto de Pandetrave, Leon, 5000 ft., 9.vii.1962.

The types of the new subspecies described in this paper are illustrated on the accompanying plate. In addition, I illustrate some of the types which I described in my earlier paper (Tremewan, 1961). All the specimens illustrated here are in the collection of W. & M. Manley.

REFERENCE

Tremewan. 1961. Notes on *Zygaena* Species, with descriptions of New Subspecies from Spain (Lepidoptera, Zygaenidae). *Ent. Rec.*, **73**: 1-8.

EXPLANATION OF Pl. I.

Fig. 1. *Zygaena sarpedon rianoica* Tremewan, holotype ♂.
Fig. 2. *Z. sarpedon rianoica* Tremewan, allotype ♀.
Fig. 3. *Z. fausta margheritae* Tremewan, holotype ♂.
Fig. 4. *Z. fausta margheritae* Tremewan, allotype ♀.
Fig. 5. *Z. hilaris leonica* Tremewan, holotype ♀.
Fig. 6. *Z. hilaris leonica* Tremewan, ♂.
Fig. 7. *Z. ignifera diezma* ssp. nov., holotype ♂.
Fig. 8. *Z. ignifera diezma* ssp. nov., allotype ♀.
Fig. 9. *Z. rhadamanthus manleyi* Tremewan, holotype ♂.
Fig. 10. *Z. rhadamanthus manleyi* Tremewan, ♀.
Fig. 11. *Z. rhadamanthus manleyi* Trmn. ab. *acingulata* Tremewan, holotype ♂.
Fig. 12. *Z. lavandulae alfacarica* Tremewan, holotype ♂.
Fig. 13. *Z. lavandulae alfacarica* Tremewan, allotype ♀.

Fig. 14. *Z. lavandulae alfacarica* Trmn. ab. *pseudoespunnensis* Tremewan, holotype ♀.
Fig. 15. *Z. lavandulae huescae* ssp. nov., holotype ♂.
Fig. 16. *Z. lavandulae huescae* ssp. nov., allotype ♀.
Fig. 17. *Z. filipendulae kricheldorffiana* Reiss ab. *sexmaculata* Tremewan, allotype ♂.
Fig. 18. *Z. trifolii pajini* ssp. nov., holotype ♂.
Fig. 19. *Z. trifolii pajini* ssp. nov., allotype ♀.
Fig. 20. *Z. lonicerae leonensis* Tremewan, holotype ♂.
Fig. 21. *Z. lonicerae leonensis* Tremewan, allotype ♀.

Notes on *Melitaea cinxia* in the Isle of Wight

By T. D. Fearnehough

During my first year of residence on the Island I have spent a lot of time investigating the Glanville fritillary. Through March and April a survey was made of the butterfly's stations along the southern coastline of the Island. Colonies of larvae were found in a number of widely separated localities, but I do not think I saw so many larvae during the whole survey as I saw during a week's holiday at Ventnor in April 1955. On that occasion, larvae of *Melitaea cinxia* L. were to be seen in thousands.

Later, I covered the entire ground again when the butterflies were on the wing. They were in good numbers, but fewer than I had anticipated from the numbers of larvae previously observed. In one locality, the species seemed to have disappeared. This was Brading Down where, during a visit made by members of the South London Entomological and Natural History Society on 6th June 1953, the insect was seen in good numbers. I visited the down many times during May and June to work for other lepidoptera, but *cinxia* was not seen.

Towards the end of March, an isolated web containing about 50 larvae was selected for rearing at home. I hoped the brood would show some varietal tendency sufficient to warrant selective breeding. In this I was lucky, for when the butterflies appeared, they showed a strong tendency towards reduction of black markings on the forewings, particularly in the males. There was also an accompanying tendency to the elongation of the pale markings on the hindwings; this feature being most noticeable in the females. A pairing was obtained between the most extreme male and female, resulting in a large batch of eggs. The larvae were reared on potted narrow-leaved plantain. They gave little trouble, for, having spun a web, they did not wander. Eventually a very solid looking web was formed and into this the entire brood of about 150 larvae gradually settled for hibernation.

The original wild larvae were reared on plantain planted in a greenhouse bed. I spent much time observing them. On one occasion whilst watching them I noticed a hunting spider, of which there were many in the greenhouse, slowly approach a cluster of larvae. Eventually it squatted on top of the larvae and remained motionless. A small movement by myself caused the spider to scuttle away, but when I remained quiet it returned. Subsequent observations showed that the accompaniment of larvae clusters by spiders was general, but any sudden move-